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| APPLICATION NO.   | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|---|-------------|----------------------|---------------------|------------------|
| 10/798,967  | 03/12/2004  | Kwong-Kit Choi       | ARL 03-56           | 7734             |
| 37064   | 7590        | 03/05/2007           | EXAMINER            |                  |
| OFFICE OF COMMAND COUNSEL,<br>U.S. ARMY MATERIEL COMMAND<br>ATTN: AMCCC-B-IP<br>9301 CHAPEK ROAD<br>FORT BELVOIR, VA 22060-5527 |             |                      | ZETTL, MARY E       |                  |
|   |             |                      | ART UNIT            | PAPER NUMBER     |
|   |             |                      | 2875                |                  |
| SHORTENED STATUTORY PERIOD OF RESPONSE  | MAIL DATE   | DELIVERY MODE        |                     |                  |
| 3 MONTHS  | 03/05/2007  | PAPER                |                     |                  |

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

| <b>Office Action Summary</b> | <b>Application No.</b> | <b>Applicant(s)</b> |
|------------------------------|------------------------|---------------------|
|                              | 10/798,967             | CHOI, KWONG-KIT     |
|                              | <b>Examiner</b>        | <b>Art Unit</b>     |
|                              | Mary Zettl             | 2875                |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

1)  Responsive to communication(s) filed on 26 January 2007.

2a)  This action is FINAL.                    2b)  This action is non-final.

3)  Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

4)  Claim(s) 1,4-9,12-14 and 17-21 is/are pending in the application.  
4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.

5)  Claim(s) 1,4-9,13,14 and 17-21 is/are allowed.

6)  Claim(s) 12 is/are rejected.

7)  Claim(s) \_\_\_\_\_ is/are objected to.

8)  Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

9)  The specification is objected to by the Examiner.

10)  The drawing(s) filed on 12 March 2004 is/are: a)  accepted or b)  objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)  The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12)  Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a)  All b)  Some \* c)  None of:  
1.  Certified copies of the priority documents have been received.  
2.  Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3.  Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

1)  Notice of References Cited (PTO-892) 4)  Interview Summary (PTO-413)  
2)  Notice of Draftsperson's Patent Drawing Review (PTO-948) Paper No(s)/Mail Date. \_\_\_\_ .  
3)  Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_ . 5)  Notice of Informal Patent Application  
6)  Other: \_\_\_\_ .

## DETAILED ACTION

### *Claim Rejections - 35 USC § 102*

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

1. Claim 12 is rejected under 35 U.S.C. 102(b) as being anticipated by Wu et al. (US 6,534,783 B1).

Regarding claim 12, Wu et al. disclose a voltage-tunable multi-color infrared (IR) detector element (Abstract) comprising: a first superlattice of quantum wells, and a second superlattice of quantum wells each adapted to detect energy at different wavelengths (Abstract); an energy relaxation layer (barrier; discussed in Abstract) interposed between the superlattice of quantum wells; wherein each quantum well comprises: a substantially-planar surface adapted to admit light (18) and means for redirecting the admitted light (redirection through refractive properties of elements 20 and 22).

### *Allowable Subject Matter*

2. Claims 1, 4-9, 13, 14, and 17-21 are allowed.

The following is an examiner's statement of reasons for allowance:

Regarding claims 1 and 7, prior art fails to teach or make obvious a detector with a tunable voltage source with a first superlattice of QWIP elements being able to detect energy at a

first range of wavelengths and a second superlattice of QWIP elements being adapted to detect energy at a second range of wavelengths.

3. Regarding claim 13, prior art fails to teach or make obvious a voltage-tunable multi-color infrared (IR) detector element comprising: a first superlattice of quantum wells being able to detect energy at a first range of wavelengths and a second superlattice of quantum wells being adapted to detect energy at a second range of wavelengths; wherein each quantum well comprises sides extending from a substantially-planar surface each side being substantially non-perpendicular to the substantially-planar surface, each side being adapted to redirect the light admitted through the substantially-planar surface.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

*Response to Amendment*

4. In the previous office action the "energy relaxation layer interposed between a first superlattice of quantum wells and a second superlattice of quantum wells" was indicated as allowable subject matter. On further review it appears that although the term energy relaxation is not always applied the layer itself is not a novel feature. It is the examiners understanding that this feature is necessary for a detector comprising quantum wells detecting energy at different wavelengths.

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

***Conclusion***

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Mary Zettl whose telephone number is (571) 272-6007. The examiner can normally be reached on M-F 8am-4:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Renee Luebke can be reached on (571) 272-2009. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



MZ



RENEE LUEBKE  
PRIMARY EXAMINER